

Name _____

Period 1 2 3

Review Sheet for Pre-AP Chemistry First Semester Final 2016

Refer to your class notes, worksheets, **old tests/ quizzes** and the textbook to complete this review sheet. Study early so that you will have time to ask questions about what you don't understand. **Do not forget to use your old Tests to also help you review for your semester final.** Most topics on the final are covered in the review sheet.

This must be completed in order to take the final

PERIODIC CHART OF THE ELEMENTS																		INERT GASES					
IA	IIA	IIIB	IVB	VB	VIB	VIIIB	VIII			IB	IIB	IIIA	IVA	VA	VIA	VIIA							
1 H 1.00797																	2 He 4.0026						
3 Li 6.939	4 Be 9.0122																	5 B 10.811	6 C 12.0112	7 N 14.0067	8 O 15.9994	9 F 18.9984	10 Ne 20.183
11 Na 22.9898	12 Mg 24.312																	13 Al 26.9815	14 Si 28.086	15 P 30.9738	16 S 32.064	17 Cl 35.453	18 Ar 39.948
19 K 39.102	20 Ca 40.08	21 Sc 44.956	22 Ti 47.90	23 V 50.942	24 Cr 51.996	25 Mn 54.9380	26 Fe 55.847	27 Co 58.9332	28 Ni 58.71	29 Cu 63.54	30 Zn 65.37	31 Ga 69.72	32 Ge 72.59	33 As 74.9216	34 Se 78.96	35 Br 79.909	36 Kr 83.80						
37 Rb 85.47	38 Sr 87.62	39 Y 88.905	40 Zr 91.22	41 Nb 92.906	42 Mo 95.94	43 Tc (99)	44 Ru 101.07	45 Rh 102.905	46 Pd 106.4	47 Ag 107.870	48 Cd 112.40	49 In 114.82	50 Sn 118.69	51 Sb 121.75	52 Te 127.60	53 I 126.904	54 Xe 131.30						
55 Cs 132.905	56 Ba 137.34	*57 La 138.91	72 Hf 178.49	73 Ta 180.948	74 W 183.85	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.09	79 Au 196.967	80 Hg 200.59	81 Tl 204.37	82 Pb 207.19	83 Bi 208.980	84 Po (210)	85 At (210)	86 Rn (222)						
87 Fr (223)	88 Ra (226)	+89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (266)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 ? (271)	111 ? (272)	112 ? (277)												

Numbers in parenthesis are mass numbers of most stable or most common isotopes.

Atomic weights corrected to conform to the 1963 values of the Commission on Atomic Weights.

The group designations used here are the former Chemical Abstract Service numbers.

* Lanthanide Series

58 Ce 140.12	59 Pr 140.907	60 Nd 144.24	61 Pm (147)	62 Sm 150.35	63 Eu 151.96	64 Gd 157.25	65 Tb 158.924	66 Dy 162.50	67 Ho 164.930	68 Er 167.26	69 Tm 168.934	70 Yb 173.04	71 Lu 174.97
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† Actinide Series

90 Th 232.038	91 Pa (231)	92 U 238.03	93 Np (237)	94 Pu (242)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (249)	99 Es (254)	100 Fm (253)	101 Md (256)	102 No (256)	103 Lr (257)
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1⁻ Charge

NO₃¹⁻ nitrate
 NO₂¹⁻ nitrite
 OH¹⁻ hydroxide
 CN¹⁻ cyanide
 C₂H₃O₂¹⁻ acetate
 HCO₃¹⁻ bicarbonate
 ClO¹⁻ hypochlorite
 SCN¹⁻ thiocyanate
 ClO₃¹⁻ chlorate

2⁻ Charge

O²⁻ oxide
 S²⁻ sulfide
 SO₄²⁻ sulfate
 SO₃²⁻ sulfite
 CO₃²⁻ carbonate
 CrO₄²⁻ chromate

3⁻ Charge

PO₄³⁻ phosphate
 P³⁻ phosphide
 N³⁻ nitride

Density = mass/ volume 1ml = 1cm³ density of water = 1g/ml

Average atomic mass = Σ(mass of isotope × relative abundance)

$$E = h \cdot \nu$$

$$c = \nu \cdot \lambda$$

$$E = h \cdot c / \lambda$$

$$h = 6.63 \times 10^{-34} \text{ Js}$$

$$c = 3.0 \times 10^8 \text{ m/s}$$

Matter: Anything that takes up space and has mass

Physical Changes and Chemical Changes

1. Define each. How can you tell the difference between the two?

Atom

2. For this Carbon-14 isotope, ¹⁴₆C

- Atomic number = _____, Mass number = _____,
- # of protons = _____, # of electrons = _____, # of neutrons = _____.

3. Atomic Masses: What is the difference between the mass number for Carbon-14 and carbon's atomic mass of 12.011 amu?

4. Calculate the atomic mass of lithium if one isotope has a mass of 6.0151 amu and a percent abundance of 7.59% and a second isotope has a mass of 7.0160 amu and a percent abundance of 92.41%.

Atomic Models:

5. Philosophers: Democritus (believed in atoms) and Aristotle (didn't believe in atoms)

Scientists: What was the contribution of each one's atomic model? Draw a model of each.

John Dalton

List the four postulates of Dalton's Atomic Theory:

J.J. Thompson- cathode ray tube

Ernest Rutherford

6. What are the long hand and short hand configurations for the following atoms:

i) Mg

ii) P

iii) Br

7. Characteristics of subatomic particles

Particle	Mass	Charge	Location in atom
Proton			
Neutron			
Electron			

Periodic trends

8. Locate or define parts of the periodic table:

a) Groups

b) Periods

c) Transition metals (d & f blocks) vs. Representative Elements (s & p blocks)

d) Alkali metals, Alkaline Earth metals, Halogens, Noble Gases

9. What are the first 18 elements on the periodic table?

10. What are the trends for...

- a) electronegativity
- b) atomic radius
- c) density
- d) ionization energy

11. a) Elements in the same _____ have similar physical and chemical characteristics because the
(group, period)
they have the same number of _____.
(atoms, protons, neutrons, electrons, valence electrons)